



**Animal Health and Food Safety Services
Animal Health Branch**

**SURVEILLANCE CASE DEFINITION FOR CONFIRMED WEST
NILE VIRUS INFECTION IN EQUINES**

**NOTE: A HORSE WITH SIGNS OF ENCEPHALITIS MAY HAVE
RABIES – TAKE PROPER PRECAUTIONS**

CONFIRMED CASE:

A horse with compatible clinical signs including ataxia (stumbling, staggering, wobbly gait, or incoordination) or at least two of the following: circling, hind limb weakness, inability to stand, multiple limb paralysis, muscle fasciculation, proprioceptive deficits, blindness, lip droop/paralysis, teeth grinding, acute death.

Plus one or more of the following:

- Isolation of West Nile (WN) virus from tissues¹
- An associated 4-fold or greater change in plaque-reduction neutralization test (PRNT) antibody titer to WN virus in appropriately timed², paired sera
- Detection of both IgM antibody to WN virus by IgM-capture ELISA in serum or cerebrospinal fluid (CSF) and an elevated titer (1:10 or greater to WN virus antibody by PRNT in serum;
- Detection of both IgM antibody to WN virus by IgM-capture ELISA in serum or CSF and a positive polymerase chain reaction (PCR)³ for WN virus genomic sequences in tissues¹
- Detection of both IgM antibody to WN virus by IgM-capture ELISA in serum or CSF and a positive immunohistochemistry (IHC) for WN virus antigen in tissue;
- Positive IHC for WN virus antigen in tissue and a positive PCR³ for WN virus genomic sequences in tissues.

PROBABLE CASE⁴:

Compatible clinical signs plus one of the following:

- Detection of IgM antibody to WN virus by IgM-capture ELISA in serum or CSF, but no elevated titer (negative at 1:10) to WN virus antibody by PRNT in serum
- No positive PCR³ for WN virus genomic sequences tissues, and no positive IHC for WN virus antigen in tissue;
- Positive PCR³ for WN virus genomic sequences in tissues;
- Positive IHC for WN virus antigen in tissue.

**California Department of Food and Agriculture
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SUSPECT CASE⁴:

Compatible clinical signs

Assumptions on which case definition is based:

- Antibody in serum may be due to vaccination or a natural exposure; additional testing must be done to confirm WN virus infection in a vaccinated horse.
- IgM-capture ELISA testing may be slightly non-specific; cross-reactions to closely related flaviviruses (e.g., SLE virus) may occur.
- IgM antibody in equine serum is relatively short-lived; a positive IgM-capture ELISA means exposure to WN virus or a closely related flavivirus has occurred, very likely within the last three months.
- Neutralizing antibody, as detected by PRNT, may not be present in equine serum until two weeks or more after exposure to WN virus; it is possible that clinical signs may be present in an equine before a serum PRNT is positive.
- Neutralizing antibody detected in serum by PRNT indicates past exposure to WN virus; equines exposed to WN virus prior to 2002 may test positive for neutralizing antibody by PRNT.

¹ Preferred diagnostic tissues from equine are brain or spinal cord; although tissues may include blood or CSF, the only known reports of WN virus isolation or positive PCR from equine blood or CSF have been related to experimentally infected animals.

² The first serum should be drawn as soon as possible after onset of clinical signs and the second drawn at least seven days after the first.

³ For horses it is recommended that rt-nested polymerase chain reaction assay be used to maximize sensitivity of the test (Emerg Infect Dis. 2001 Jul-Aug; 7(4):739-41)

⁴ An equine case classified as a suspect or probable case should, if possible, undergo further diagnostic testing to confirm or rule out WN virus as the cause of the clinical illness